



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,246	10/28/2003	Joerg Bischoff	509982005700	7040
20872	7590	09/26/2006		
MORRISON & FOERSTER LLP 425 MARKET STREET SAN FRANCISCO, CA 94105-2482			EXAMINER NGUYEN, SANG H	
			ART UNIT 2877	PAPER NUMBER

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,246

Applicant(s)

BISCHOFF ET AL.

Examiner

Sang Nguyen

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCe 08/17/06.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-14 and 16-25 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 1,2,4-9,13-14, and 16-21 is/are allowed.
6) ☒ Claim(s) 10,22 and 25 is/are rejected.
7) ☒ Claim(s) 11,12,23 and 24 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission RCE filed on 08/17/06 has been entered.

Response to Amendment

Applicant's response to amendment filed on 08/17/06 has been acknowledge. Claims 1-2 and 4-14 and 16-25 are pending and claims 3 and 15 have been canceled by the amendment on 08/17/06..

Rejection of Claims 10, 22, and 25 as being unpatentable over Taubenblatt (U.S. Patent No. 5,432,607) in view of Michaelis (U.S. Patent No. 5,979,244) has been maintained in light of applicant's remarks on 08/17/06.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 10, 22, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taubenblatt (U.S. Patent No. 5,432,607) in view of Michaelis (U.S. Patent No. 5,979,244).

Regarding claims 10, 22, and 25; Taubenblatt discloses method for examining a structure (400 of figure 4 and col.6 lines 10-23) formed on a semiconductor wafer (col.3 lines 13-22), comprising:

- directing an incidence beam (332 of figure 5) to the structure (400a, 400b, 400c

of figure 4) of the surface sample (340 of figure 5) at an incidence angle (**THETA 1** of figure 5) and an azimuth angle (**PHI 1** of figure 5 and col.9 line 65 to col.10 line 2 and lines 40-54 and claim 7) by a laser source (310 of figure 5),

- scanning the incidence beam (332 of figure 5) over a range of a range of azimuth angles (**PHI 1**, **PHI 2** of figure 5) to obtain an azimuthal scan of the structure considered to be a scanning state (390 of figure 5) with azimuth angle (**PHI 1** of figure 5); and
- measuring the cross polarization components (350 of figure 5 as defined analyzing polarizer [350] has S polarized component and P polarized component [see figure 2]) of diffracted beams (342 of figure 6A) from the structure of surface sample (340 of figure 5) by a CCD camera (370 of figure 5) in the during the azimuthal scan by the scanning stage (390 of figure 5). See figures 1-6.

Taubenblatt discloses all of features of claimed invention except for determining one or more of conditions including: a) a zeroth azimuth position, wherein the cross polarization components are zero at the zero azimuth position; b) symmetry of a contact hole in a contact hole array; and c) the rotation of the structure is determined based on the azimuthal scan.

(It is noted that the language of the present invention "determining one or more of conditions including: a) a zeroth azimuth position, wherein the cross polarization components are zero at the zero azimuth position; b) symmetry of a contact hole in a contact hole array; and c) the rotation of the structure is determined based on the azimuthal scan" considered to be a) determining one or more of conditions including a zeroth azimuth position, wherein the cross polarization components are zero at the

zero azimuth position; or a) determining one or more of conditions including symmetry of a contact hole in a contact hole array, or c) determining one or more of conditions including the rotation of the structure is determined based on the azimuthal scan. For examining purposes, Examiner considered the limitation of claim to be "determining one or more of conditions including the rotation of the structure is determined based on the azimuthal scan".

However, at figures 4-6 and 8 of Michaelis teaches that it is known in the art to provide a controlling unit (618 of figure 6) coupled to a rotating stage (602 of figure 6) for determining one of conditions for rotating of the angle structure sample (620 of figure 6 and col.4 lines 10-16 and 36-42, and col.10 lines 1-13 and 44-49) and the controlling unit (618 of figure 6) for determining rotation of the structure based on the measured cross polarization or analyzer (612 of figure 6).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made modify a system and method for examining a structure formed on the semiconductor wafer of Taubenblatt with determining one or more of conditions including the rotation of the structure is determined based on the azimuthal scan as taught by Michaelis for the purpose of determining the stress on a sample at high lateral resolution (col.2 lines 5-10).

Allowable Subject Matter

Claims 1-2, 4-9, 13-14, and 16-21 are allowed the prior art of the record for reasons set forth in the previous Office action on 05/17/06 with pages 7-8.

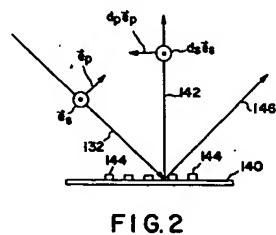
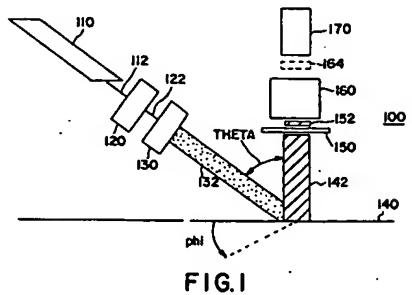
Claims 11-12 and 23-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons of the limitations of claims 11-12 and 23-24 set forth in previous Office action on 05/17/06 with pages 7-8.

Response to Arguments

Applicant's arguments filed 08/17/06 have been fully considered but they are not persuasive. Taubenblatt and Michaelis does not teach or suggest "measuring the cross polarization components of diffracted beams during the azimuthal scan" and determining rotation of the structure based on the measured cross polarization as recited in claims 10, 22, and 25.

This argument is not persuasive. The examiner would like to point out that the cross defines intersect lines each other (see Webster's New Collegiate Dictionary). Moreover, Taubenblatt teaches CCD camera (370 of figure 5) for measuring the cross polarization components (see col.5 lines 38-46 and col.7 lines 7-30, for example, analyzing polarizer [350 of figure 5] has a S polarized component [$e_s d_s$ of figure 2] is perpendicular [defined cross] a P polarized component [$e_p d_p$ of figure 2]). See figures 1-2.

U.S. Patent July 11, 1995 Sheet 1 of 5 5,432,607



In response to applicant's argument, that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both of Tautenblatt and Michaelis disclose the same function for the purpose of the using ellipsometry device for detecting diffracting pattern on the substrate. As stated in previous Office action, Taubenblatt discloses all of features of claimed invention except for determining one or more of conditions including: a) a zeroth azimuth position,

wherein the cross polarization components are zero at the zero azimuth position; b) symmetry of a contact hole in a contact hole array; and c) the rotation of the structure is determined based on the azimuthal scan. Examiner noted above that the language of the present invention considered to be "determining one or more of conditions including the rotation of the structure is determined based on the measured cross polarization components". However, at figures 4-6 and 8 of Michaelis teaches that it is known in the art to provide a processor of a controlling unit (618 of figure 6) coupled to a rotating stage (602 of figure 6) for determining one of conditions for rotating of the angle structure sample (620 of figure 6 and col.4 lines 10-16 and 36-42, and col.10 lines 1-13 and 44-49) and the controlling unit (618 of figure 6) for determining rotation of the structure based on the measured cross polarization or analyzer component (612 of figure 6). Therefore, the references are considered in combination, the recitation of the claims would have been obvious suggested.

For the reasons set forth above the arguments, it is believed that the rejection of the claims 10, 22, and 25 under 103 (a) is proper.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE**

FINAL even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

September 16, 2006


Sang H. Nguyen
Patent Examiner
Art Unit 2877